

Rotem as point-of-care test during normal pregnancy: reference values

Wampers A.¹, Cherif S.¹, Van Laecke E.¹, Devreese K.², De Hert S.¹, Coppens M.¹

¹University Hospital Ghent, Dept of Anaesthesiology, Ghent, Belgium, ²University Hospital Ghent, Dept of Clinical chemistry, Ghent, Belgium

Goal of Study: Rotational thromboelastometry (ROTEM) is a point-of-care (POC) bedside test that allows rapid evaluation of the overall coagulation system. POC coagulation testing might provide essential information for management of the high risk obstetric patient.

However reference values during pregnancy are still poorly defined. We measured ROTEM in normal at term pregnant women and compared these to values of non-pregnant female volunteers in order to assess how pregnancy alters these POC coagulation variables.

We hypothesized that with pregnancy POC coagulation variables would be indicative for a hypercoagulable state.

Methods: Blood samples were collected from 20 female non-pregnant volunteers and 12 at term pregnant women. ROTEM was performed according to the specific requirements together with hematocrit (Hct) and platelet count. Data between normal volunteers and pregnant women were compared using the Mann-Whitney U test.

Results and Discussion: In pregnant women the Hct was 32.9% (31.9-33.8), in non-pregnant volunteers 36.6% (35.6-37.5) ($P<0.01$). Platelet count was 154.000/ μ l (130.000-178.000) vs 222.000/ μ l (195.000-248.000), ($P<0.01$) respectively.

ROTEM showed that initiation of clotting, CT (clotting time), by tissue factor (EXTEM) is comparable between pregnant women and non-pregnant volunteers 62 s (52-71) vs 63 s (59-67) ($P>0.05$). Clot kinetics (time from 2 to 20 mm amplitude), as measured by CFT (clot formation time) is more rapid in pregnant women 70 s (57-83) vs 79 s (73-86) ($P=0.008$). Clot strengthening (α -angle 77° (75-79) vs 74° (73-76) ($P=0.032$)) and maximum clot firmness (MCF) 71 mm (69-73) vs 64 mm (62-66) ($P<0.001$) is increased during pregnancy. EXTEM MCF reflects the platelet interaction with fibrinogen. It takes longer to reach the maximum amplitude in pregnant patients 1687 s (1581- 1794) vs 1378 s (1214-1543) ($P=0.008$). INTEM, FIBTEM and APTTEM also reflect hypercoagulability.

Conclusion(s): This study provides reference values for Rotem parameters during normal pregnancy. Values are different from non-pregnant women and reflect the hypercoagulable state during pregnancy. These values can be used as reference when assessing coagulation status with POC coagulation testing in obstetric patients. Further study is needed to assess threshold values for haemostatic therapy in postpartum haemorrhage or decision making regarding to neuraxial anaesthesia in preeclampsia.

